-- However, a laser beam in a wavelength region less than approximately the wavelength of the ArF excimer laser beam is absorbed by oxygen in air and the transmission of the laser beam is lowered. To cope with this problem, in an exposure apparatus using the ArF excimer laser beam, almost all the air in the light path of the exposure light is replaced with nitrogen. Further, since a laser beam is somewhat absorbed even by nitrogen in a wavelength region of approximately 190 nm or less (the vacuum ultraviolet region), nitrogen must be replaced with another gas i.e., an inactive gas other than nitrogen), which permits the laser beam to pass therethrough, or the interior of the exposure apparatus must be evacuated. However, in order to evacuate the exposure apparatus, the apparatus must be strongly constructed so as to withstand high pressure, increasing the manufacturing cost of the apparatus. Thus, a system for replacing the gas in the light path of the exposure light with any of other gases having a high degree of transmission is employed. It is contemplated to be most preferable to replace the atmosphere in the vicinity of the light path of the exposure light and the atmosphere in the vicinity of optical elements of the exposure apparatus with helium, in consideration of safety, good heat conductivity, a smaller change in reflective index due to temperature, and the like. --

Please substitute the paragraph beginning at page 3, line 7, with the following. A marked-up copy of this paragraph, showing the changes made thereto, is attached in Appendix A.

-- In view of the problem of the conventional example, it is an object of the present invention to instantly replace the air in a vessel, which hermetically seals the vicinity of the light path of exposure light in a semiconductor exposure apparatus, with another gas. --

Please substitute the paragraph beginning at page 6, line 20, with the following. A marked-up copy of this paragraph, showing the changes made thereto, is attached in Appendix A.

a3

-- It is preferable that the illuminant be an illuminant of an F2 laser or Ar2 laser. --

Please substitute the paragraph beginning at page 23, line 18, and ending on page 24, line 1, with the following. A marked-up copy of this paragraph, showing the changes made thereto, is attached in Appendix A.

a4

-- Further, the above-mentioned reticle stage 9 moves in the Y-direction as the scanning direction (and sometimes also in the X-direction) along the reference plane formed on the external cylinder 24. In the embodiment, the reticle stage 9 is supported in a non-contact state with respect to the external cylinder 24 by a guide using gas bearings. Note that the guide for supporting the reticle stage 9 also may use a rolling guide using balls or a sliding guide using rollers in place of the gas bearings. --

Please substitute the paragraph beginning at page 33, line 10, with the following. A marked-up copy of this paragraph, showing the changes made thereto, is attached in Appendix A.

a5

-- While the same gas supply port, gas exhaust port and ventilation ports are used for nitrogen and helium in the above description, the embodiment is not limited thereto. For example, the gas supply port for nitrogen may be disposed at the end of the chamber 4 on the illumination side and the gas supply port for helium may be disposed at the end of the chamber 4 on the exposure apparatus side. Further, in view of the specific gravities of nitrogen and helium,

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A5 concl'd

the positions of the ventilation ports, which are important in the formation of the flow path through the chamber 4, may differ between a time when nitrogen is supplied and a time when helium is supplied. This may be realized by providing openable/closable ventilation ports and selectively closing and opening them depending upon the type of gas being supplied. --

Please substitute the paragraph beginning at page 34, line 22, with the following. A marked-up copy of this paragraph, showing the changes made thereto, is attached in Appendix A.

A6

-- In Fig. 1, a gas supply source 57 includes a nitrogen gas supply source 57a and a helium gas supply source 57b. These two types of gases exhibit an excellent transmissivity to an F2 laser beam. --

Please substitute the paragraph beginning at page 36, line 22, and ending on page 37, line 6, with the following. A marked-up copy of this paragraph, showing the changes made thereto, is attached in Appendix A.

A7

-- Note that the gas supplied from the gas supply port 59 flows through the interior of the cabinet 6, flows along the light path between the condensers 302 and 305, and passes through the ventilation hole 303 in the support table 304, and is discharged from the gas discharge port 60. The gas flow path in the chamber 6 is conceptually shown by arrows in Fig. 4. The provision of the gas flow path which sequentially passes through the spaces between optical elements in the chamber 6 permits the air in those spaces to be effectively displaced by the gas. --

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Please substitute the paragraph beginning at page 38, line 14, and ending on page 39, line 1, with the following. A marked-up copy of this paragraph, showing the changes made thereto, is attached in Appendix A.

-- According to this embodiment, while the same gas supply port, gas exhaust port and ventilation ports are used for nitrogen and helium, the invention is not limited thereto similarly to the case of the above-mentioned chamber 4. Further, in view of the specific gravities of nitrogen and helium, the positions of the ventilation ports which are important in the formation of the flow path in the cabinet 6, may differ between a time when nitrogen is supplied and a time when helium is supplied. This may be realized by providing openable/closable ventilation ports and selectively closing and opening them depending upon the type of gas being supplied, similarly to the case of the above-mentioned chamber 4. --

Please substitute the paragraph beginning at page 41, line 13, and ending on page 42, line 11, with the following. A marked-up copy of this paragraph, showing the changes made thereto, is attached in Appendix A.

-- According to this embodiment, while the same gas supply port, gas exhaust port and ventilation ports are used for nitrogen and helium, the invention is not limited thereto, similarly to the case of the above-mentioned chamber 4. In particular, when gas in the projection optical system 13 with a vertical optical axis is replaced, it is preferable to dispose a gas supply port on an upper and lower portion of the projection optical system 13 and to dispose a gas discharge port on an upper and lower portion thereof, in consideration of the different specific gravities of

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nitrogen and helium. In this case, nitrogen may be supplied from the gas supply port disposed at a lower portion of the projection optical system 13 and helium may be supplied from the gas supply port disposed at the upper portion thereof. Further, in view of the specific gravities of nitrogen and helium, the positions of the ventilation ports, which are important in the formation of the flow path in the projection optical system 13, may differ between a time when nitrogen is supplied and a time when helium is supplied. This may be realized by providing openable/closable ventilation ports and selectively closing and opening them depending upon the type of gas being supplied, similarly to the case of the above-mentioned chamber 4. --

a9 cont'd

Please substitute the paragraph beginning at page 44, line 3, with the following. A marked-up copy of this paragraph, showing the changes made thereto, is attached in Appendix A.

a10

-- A gas supply source 107 supplies an inactive gas, which, in this embodiment, is helium gas or nitrogen gas. --

Please substitute the paragraph beginning at page 45, line 22, and ending on page 46, line 3, with the following. A marked-up copy of this paragraph, showing the changes made thereto, is attached in Appendix A.

a11

-- Since the air in the chamber 26 is replaced with helium gas or nitrogen gas, the oxygen and ozone concentrations in the chamber 26 are at very low levels. However, a very minute amount (for example, on the order of ppm or less) of ozone and/or oxygen which still remains in the chamber 26 can be removed by the ozone/oxygen removing mechanism 501. --

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Please substitute the paragraph beginning at page 46, line 6, with the following. A marked-up copy of this paragraph, showing the changes made thereto, is attached in Appendix A.

a12

-- While an ion exchange type filter and an activated carbon type filter are commonly used chemical filters for this purpose, a ceramic porous body type filter is used in this embodiment. --

Please substitute the paragraph beginning at page 51, line 14, and ending on page 52, line 5, with the following. A marked-up copy of this paragraph, showing the changes made thereto, is attached in Appendix A.

a13

-- The pressure of the gas supplied from piping 80 is detecting by a pressure gauge 701 and the flow rate of the gas is adjusted to a predetermined value using a control valve 702 that is controlled by the controller 78. The gas then passes through a collection pump 703, after which it is temporarily stored in a buffer tank 704, before being compressed to a predetermined pressure by a compressor 705 and supplied to pipings 81a to 81c. Further, an auxiliary line, by which the gas can be exhausted by an exhaust pump 706, branches off at a point between the pressure gauge 701 and the control valve 702. When it is necessary to exhaust the gas, an amount of gas to be exhausted is controlled by a mass flow controller 708 in response to a result detected by a pressure gauge 707 of the buffer tank 704. Note that the mass flow controller 708 is controlled by the controller 78 (Fig. 1) in response to a result detected by the pressure gauge 707. --

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Please substitute the paragraph beginning at page 64, line 15, and ending on page 65, line 18, with the following. A marked-up copy of this paragraph, showing the changes made thereto, is attached in Appendix A.

-- Next, a process for manufacturing a semiconductor device making use of the manufacturing system described above will be explained. Fig. 12 shows a flowchart of the overall manufacturing process of the semiconductor device. At step 1 (circuit design step), a circuit of the semiconductor device is designed. At step 2 (mask making step), a mask on which a designed circuit pattern is formed is made. At step 3 (wafer making step), a wafer is made using a material such as silicon or the like. Step 4 (wafer processing step) is called an upstream process in which an actual circuit is formed on the wafer by lithography using the mask and the wafer which were prepared in previous steps. Step 5 is called a downstream process in which semiconductor chips are made using the wafer made at step 4. Specifically, step 5 includes an assembly step (dicing and bonding steps), a packaging step (chip encapsulating step), and the like. After step 6 (inspection step), inspections are carried out to confirm the operation, durability and the like of the semiconductor device made in step 5. The semiconductor device is completed through the above steps and shipped in step 7. The upstream process and the downstream process are carried out in different dedicated factories, and maintenance of the manufacturing apparatuses of each factory is performed by the remote maintenance system described above. Further, information as to production management and maintenance of the manufacturing apparatuses is also transmitted between the factory of the upstream process and the factory of the downstream process through the Internet or a private line network. --

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Please substitute the paragraph beginning at page 66, line 19. A marked-up copy of this paragraph, showing the changes made thereto, is attached in Appendix A.

a15

-- Except as otherwise disclosed herein, the various components shown in outline or in block form in the figures are individually well known and their internal construction and operation are not critical either to the making or using of this invention or to a description of the best mode of the invention. --

IN THE CLAIMS:

Please CANCEL claims 16, 36, 48 and 52 without prejudice to or disclaimer of the recited subject matter.

Please AMEND claims 1, 2, 6-8, 20-22, 24, 26-28, 40-42, 45, 47, 49-51 and 53-55 as follows. A marked-up copy of the amended claims, showing the changes made thereto, is attached in Appendix A. For the Examiner's convenience, all claims currently pending in this application have been reproduced below:

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a16

1. (Amended) An exposure apparatus, comprising:

a chamber surrounding a predetermined space;

a first gas supply unit for supplying a first gas into said chamber;

a second gas supply unit for supplying a second gas, different from the first gas, into said chamber, wherein the first and second gases contain substantially no oxygen; and

A